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(54) **MOVING BED REACTOR FOR SOLAR
THERMOCHEMICAL FUEL PRODUCTION**

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USPC **422/630**; 422/631; 422/634; 422/198;
422/199; 423/657

(58) **Field of Classification Search** 422/630,
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See application file for complete search history.

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(57) **ABSTRACT**

Reactors and methods for solar thermochemical reactions are
disclosed. Embodiments of reactors include at least two dis-
tinct reactor chambers between which there is at least a pres-
sure differential. In embodiments, reactive particles are
exchanged between chambers during a reaction cycle to ther-
mally reduce the particles at first conditions and oxidize the
particles at second conditions to produce chemical work from
heat. In embodiments, chambers of a reactor are coupled to a
heat exchanger to pre-heat the reactive particles prior to direct
exposure to thermal energy with heat transferred from
reduced reactive particles as the particles are oppositely con-
veyed between the thermal reduction chamber and the fuel
production chamber. In an embodiment, particle conveyance
is in part provided by an elevator which may further function
as a heat exchanger.

11 Claims, 7 Drawing Sheets

